

A COMPARISON OF TWO INTERVENTION ROLES: PEER MONITOR AND POINT EARNER

GEORGE W. STERN AND SUSAN A. FOWLER

UNIVERSITY OF KANSAS

FRANK W. KOHLER

WESTERN PSYCHIATRIC INSTITUTE AND CLINIC, UNIVERSITY OF PITTSBURGH

Two fifth-grade students' high levels of off-task and disruptive behavior decreased rapidly during an intervention in which they were appointed peer monitors or point earners. The children worked in dyads in which one child served as a peer monitor and the other child earned points from his or her monitor for good behavior. Points were accumulated as part of a group contingency. We introduced the two appointments in an independent math period and alternated the appointments across days. The peer monitor and point earner roles, when alternated on an every-other-day basis, were equally effective in reducing the students' inappropriate behavior. Furthermore, their behavior during intervention fell well within the range of inappropriate behavior levels exhibited by classmates. The speed with which both students completed their math problems increased during both appointments. The accuracy of their academic work, however, varied; one student improved slightly and the other student decreased slightly in accuracy.

DESCRIPTORS: peers, group contingencies, peer-mediated intervention, classroom behavior, alternating treatment

Research assessing peer-mediated interventions typically has focused on the children who receive the intervention, documenting changes in behaviors such as classroom comportment or peer interactions (cf. Kalfus, 1984; McGee, Kauffman, Nussen, 1977). A few studies, however, have documented beneficial changes in the children who are trained to implement behavioral interventions. For instance, Drabman and Spitznik (1973) noted improved behavior by a mentally retarded adolescent who was instructed to distribute candy to classmates contingent on the classmates' good behavior. More recently, Dougherty, Fowler, and Paine (1985) and Fowler, Dougherty, Kirby, and Kohler (1986) demonstrated that elementary school children, appointed to monitor classmates on the playground, also reduced their own negative interactions.

These studies did not examine, however, whether results achieved by appointing children to the role of monitor or behavior manager would be comparable to the effects achieved if these same children were directly monitored by peers. The results achieved with 1 subject in the Dougherty et al. (1985) study suggest that the procedures may be comparable. However in that study, the child's

appointment as peer monitor was preceded by conditions in which the child first was monitored by adults and then by exemplary peers. The positive effects observed during the appointment as monitor could have been influenced by the preceding interventions.

A comparison of the two roles is important. If the procedures do not produce comparable effects, then the more effective procedure should be identified and used as the primary mode of intervention. If both procedures are equally effective, however, then children could alternate roles in peer-mediated intervention programs. Such alternation might minimize the social stigma sometimes attached to children who are in need of treatment. Furthermore, several peer-intervention studies have reported either anecdotally (e.g., Carden-Smith & Fowler, 1984; Phillips, Phillips, Wolf, & Fixsen, 1973; Strain, 1981) or through a consumer satisfaction survey (e.g., Dougherty et al., 1985) that children involved in peer-mediated interventions enjoyed and sought out positions of peer management.

The purpose of the present study is to compare, through a daily alternation of roles, the appointment as peer monitor with the appointment as point

earner (monitored peer) to determine whether the two interventions produce comparable results.

METHOD

Children and Setting

The investigation was conducted during the spring semester in a combination fifth- and sixth-grade classroom comprised of 32 children. Two fifth graders, Robert and Karen, were the primary subjects. They were referred for intervention by their teacher because they were disruptive during seat work, rarely completed their math assignments, and were members of the lowest performing math group. Three students from the same group were chosen by the teacher to work with Robert and Karen as partners. Partner C worked with Robert and Partners A and B worked with Karen.

At the request of the school district, four additional children participated in the study as "decoys." They were included to reduce the possibility that the target children might be stigmatized for their participation. These children were selected by the teacher on the basis of superior academic records and popularity. They received the same intervention as Robert and Karen, but at a later time of the school day.

A teacher with 14 years experience and a paraprofessional with 1 year of experience taught the class. The paraprofessional was responsible for the math instruction of the target children and their work partners.

Data were collected between 1:30 and 2:00 p.m. on days in which math work was assigned (usually 3 or 4 days per week). Both target children and their peer partners worked independently at this time on math assignments from their workbooks. The teachers provided small-group instruction to other members of the class at this time and usually were unavailable to Karen, Robert, or members of their group. The length of the work sessions ranged from 11 to 20 min. Robert and Karen's sessions averaged 19 and 17 min, respectively.

Experimental Design and Procedures

The experimental design involved an alternating treatment in which a monitoring condition and a point-earner condition were alternated every other

day during the intervention phase. The intervention condition was introduced in a multiple baseline fashion across Karen and Robert. The sequence of conditions for Robert was A-B-A-B (baseline, intervention, baseline, intervention). Karen's condition sequence was A-B-A (baseline, intervention, baseline).

Baseline. No intervention occurred. Children did their independent work as they had all year. The paraprofessional teacher provided occasional prompts or reprimands to resume work if children were disruptive or not working. Students occasionally were required to stay in the class during recess if they did not finish their work. No positive contingencies were provided for on-task behavior or task completion.

Monitor training. The participating children were trained in pairs by the first author in a small room near the classroom. Questions and feedback were encouraged throughout the 45-min training session. Training included six components presented in the following order. First, a rationale for the student's participation was given; second, the procedures of the program were described; third, the experimenter modeled the correct use of all monitoring materials; fourth, the group reinforcement contingency was explained to the children; fifth, the monitoring procedure was practiced by each child until 100% proficiency was reached; and sixth, children were encouraged to request feedback or ask questions.

Intervention. In the monitor condition both Robert and Karen sat across from his or her work partner, the point earner. In addition to completing their own math assignments, they had three additional responsibilities as monitors: (a) to evaluate the point earner's behavior; (b) to evaluate the point earner's written work; and (c) to award and record points for behavior and work that met a set criterion. At unpredictable intervals during the independent work session, the peer monitors received recorded prompts via headsets to complete the Good Behavior Checklist (see Table 1) and to give the completed checklist to the point earner.

At the session's end the peer monitors evaluated their partners' work according to the "Good work Checklist," also presented in Table 1. They then

Table 1
Checklists Used by the Peer Monitors

Good behavior checklist (completed three times per session)			Good work checklist (completed once at end of session)		
Is the person you are watching:			Did your partner:		
Yes	No	1. Sitting in their chair?	Yes	No	1. Put his or her name on the assignment?
Yes	No	2. Being quiet (that means not talking at all)?	Yes	No	2. Put the date on the assignment?
Yes	No	3. Working on their assignment?	Yes	No	3. Write the page and problem numbers on the assignment?
			Yes	No	4. Erase mistakes neatly or have no erasures?
			Yes	No	5. Write his/her answers so you can read and understand your partner's work?
			Yes	No	6. Complete the problems? If not, how many problems were done? _____

tabulated the number of "yes" responses earned by their partners. If the point earners met the criteria, which ranged from 13 to 15 "yes" responses of 18 possible, the monitors recorded a daily point on a publicly displayed chart.

The experimenter provided no feedback to the peer monitors regarding the accuracy of their evaluations, with the exception of Partner A, who was corrected privately on Sessions 15 and 16. Instead, the experimenter instructed the peer monitors to set a good example for the point earner and simply thanked them each day for completing their monitor duties.

On alternating days Robert and Karen worked as point earners. Their partners served as monitors and completed the Good Work Checklist and Good Behavior Checklist for Karen and Robert and awarded each a daily point if criterion was met.

Points from each of the dyads were accumulated for four consecutive sessions. These points were exchanged for a class reward, usually a 30-min movie. To earn the movie all point earners (both the decoy and target children) were required to meet their criterion number of daily points on three of four consecutive sessions.

Dependent Measures

Observations of Robert and Karen's on-task, off-task, and disruptive behavior were collected during

independent math work. Sampled observations also were collected with seven classmates: the four decoy children and three randomly selected children who were not participating in the intervention. The four decoy children were observed for 5 min on 15 separate occasions. The three randomly selected children were observed for 5 min on five separate occasions. The independent math period for these seven children either immediately preceded or followed Robert and Karen's math period. It was not possible to collect behavioral data on Robert and Karen's partners because of the limited number of observers.

In addition, Robert and Karen's assignments were collected and scored for total number of problems completed and number of problems completed correctly.

Observations. The three behavior categories, on-task, off-task, and disruptive, were mutually exclusive. Disruptive took priority over off-task, which in turn took priority over on-task. These behaviors were scored using a 10-s continuous interval scoring system.

On-task behavior included working on an assignment, eliciting help from the teacher, listening to instructions, or following a specific instruction (e.g., "Pass back the test.").

Off-task behavior included any behavior of 3 s or longer that was not in accordance with specific

instructions or assignments made by the teacher. Off-task behavior did not involve another child. Examples of off-task included doodling, turning the workbook pages randomly, staring off into space, or watching other children.

Disruptive behavior included any behavior that interfered with the work of another child. Scoring criteria consisted of off-task behavior that was clearly heard by an observer and was watched by at least one other child. Examples of disruptive behavior included talking with another child, poking another child, perseverative pencil tapping, throwing a paper airplane.

Reliability was assessed across all experimental conditions and across both monitor and point-earner roles. Twenty percent of Karen's total sessions and 18% of Robert's total sessions were scored independently by two observers. Occurrence and nonoccurrence reliability calculations for each behavior were derived by using the formula: total number of agreements divided by the total number of agreements plus disagreements, multiplied by 100%. The average occurrence and nonoccurrence reliability for all conditions and behavior categories was at least 80% for Robert and at least 83% for Karen.

Assessment of academic productivity. Two measures of academic productivity also were calculated: (a) number of problems done per minute and (b) percentage of problems done correctly. Two observers who independently graded each math problem for 20% of Karen's sessions and 18% of Robert's sessions agreed on 100% of these measures.

Peer-Monitor Accuracy

The accuracy of the peer monitor was assessed for 85% of the Good Behavior Checklist by an adult observer who simultaneously rated the point earner on each of the questions on the checklist. Interrater reliability was calculated between the adult observer and the peer monitor.

Consumer Satisfaction

At the midpoint of the intervention the children completed a questionnaire on which they rated the

degree to which they "liked" or "disliked" various aspects of their point-earner and peer-monitor roles.

RESULTS

Robert and Karen

Robert and Karen's percentage of total inappropriate behavior (off-task and disruptive combined) is depicted in Figure 1. In general, the intervention was effective in reducing both children's off-task and disruptive behaviors in both point-earner and peer-monitor sessions. In fact, there were no clear differences in performance for either child between peer-monitor and point-earner sessions. Karen's level of inappropriate behavior during intervention was higher with her first partner (A), but appeared to stabilize at lower levels with her second partner (B). With the exception of one session (31), Karen maintained her reduced level of inappropriate behavior during a return to baseline condition. Robert's level of inappropriate behavior increased somewhat during his brief return to baseline, but did not approximate his original baseline levels. His level of inappropriate behavior during his second intervention condition was comparable to the levels achieved during his first intervention condition.

Robert and Karen's levels of inappropriate behavior during the intervention conditions were similar to the levels exhibited by their classmates in the decoy pairs and by one of the classmates selected at random; these classmates' average levels of inappropriate behavior ranged from 9% to 20%. Two other children selected at random had higher levels of inappropriate behavior, averaging 39% and 43%.

The academic measures for Karen and Robert are reported in Table 2. Both children's rate of math work increased during intervention, although their daily performance was variable. Karen's improved rate of task completion, which was somewhat higher on peer-monitor days than on point-earner days, also was maintained during the final baseline. The accuracy of her work, however, decreased somewhat from the initial baseline rate and was variable, ranging on a daily basis from 20% to 100%. In general, Robert completed twice as

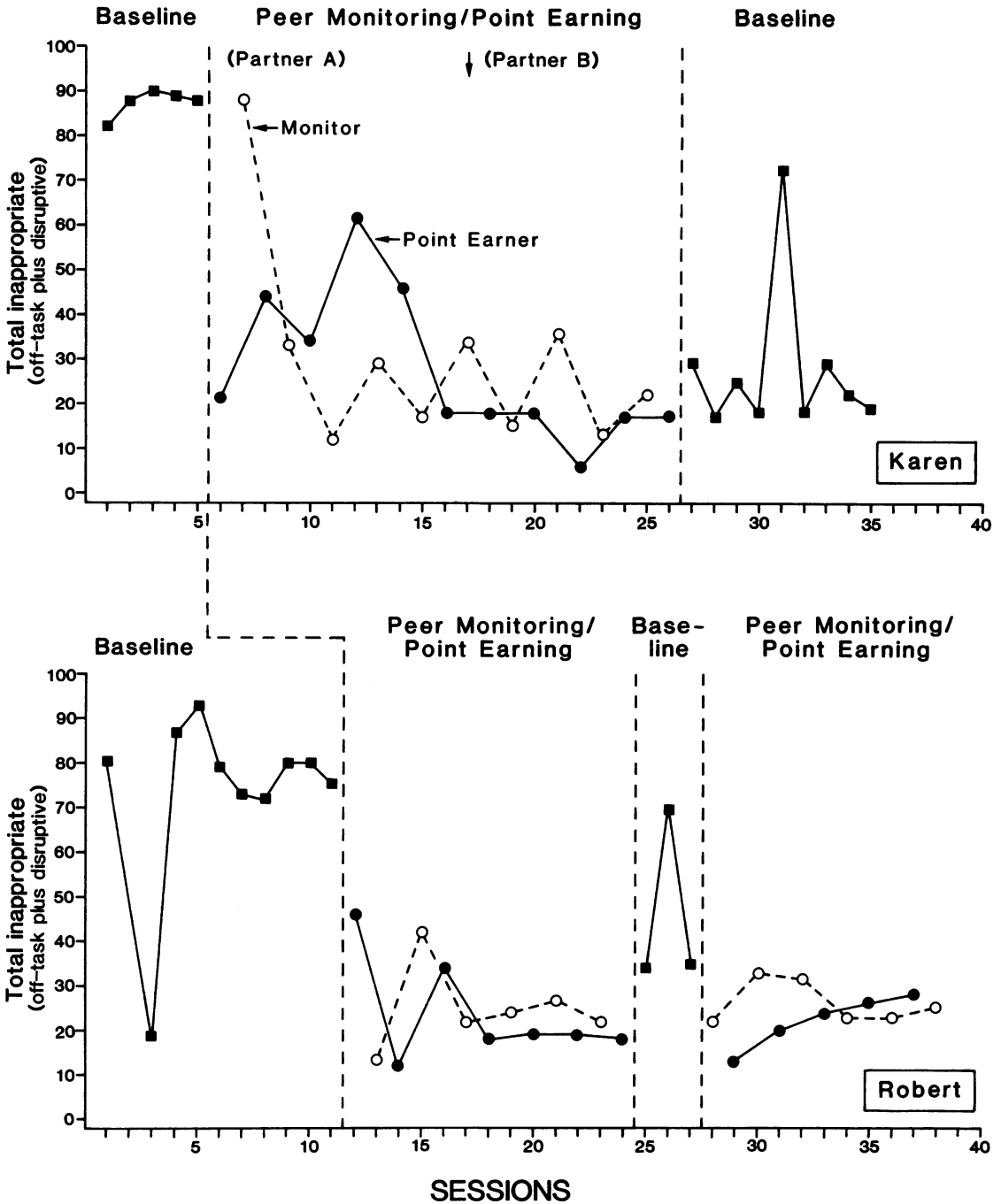


Figure 1. Percentage of intervals in which Karen and Robert were off-task and/or disruptive.

many problems during intervention as he did in baseline. With the exception of two baseline sessions, Robert's work accuracy remained fairly high and stable throughout the study; it ranged from 70% to 100% and averaged near or above 80%.

Peer-Monitor Accuracy

The peer monitors' evaluations on the Good Behavior and Good Work Checklists matched the adult observer's evaluations 100% of the time when

Table 2
Karen's Academic Performance Across Conditions

	Baseline	Partner A		Partner B		Baseline
		Point earner	Peer monitor	Point earner	Peer monitor	
Problems completed per minute	0.42	0.54	0.83	0.80	1.1	1.07
% Correct	87	78	60	54	71	72

Robert's Academic Performance Across Conditions

	Baseline	Intervention 1		Baseline	Intervention 2	
		Point earner	Peer monitor		Point earner	Peer monitor
Problems completed per minute	0.46	1.07	0.87	0.42	0.73	0.93
% Correct	77	85	87	87	87	81

the adult observer recorded a positive ("yes") evaluation. When the adult observer scored a negative ("no") evaluation, the agreement between the adult and peer was lower, ranging between 74% and 83%, with the exception of Partner A; her agreement with the adult observer was 0% because she never gave a negative evaluation.

Peer-Monitor Evaluations

Approximately 90% of the evaluations received by Karen and Robert were positive. The percentage of positive evaluations received by their partners and other participating children ranged from 83% to 100%.

Consumer Satisfaction

The children's ratings on the consumer satisfaction scale suggested that all of the children participating found both the peer-monitor and point-earner roles to be either a neutral or positive experience. There was a slight preference for the point-earner role. Three children rated "not giving a point" in the peer-monitor role as unpleasant; six rated it as neutral. Six children rated "not earning a point" as unpleasant; three rated it as neutral. Finally, five of the children liked the reward (moves) and four children rated it as neutral.

DISCUSSION

The primary contribution of the present study is the comparison of the roles of peer monitor and

point earner. The findings demonstrate that both roles were effective in substantially reducing disruptive and off-task behavior while promoting, in Robert's case, improved task completion and accuracy. One role did not appear to be superior to another in producing positive effects, if alternated on an every-other-day basis. However, we do not know if the use of the alternating design contributed to the equivalence of effects produced in the point-earner and monitor roles. Perhaps differential results would be obtained if children experienced prolonged roles as monitor or point earner. The extent to which daily alternation of treatment conditions may affect results should be assessed in future research. Future research might also examine the extent to which the peer-monitor or point-earner roles would have been sufficient, in the absence of a group contingency, to change child behavior.

We chose the alternating treatment design for two reasons: (a) to make direct comparison between two treatments with the same child in the same time frame and (b) to provide a system of checks and balances that might minimize the potential for conflict between partners over role preferences or occasional negative evaluations. Results of the consumer satisfaction scale indicated that the children reported only a slight preference for the point-earner role. Furthermore, as noted in previous studies (e.g., Carden-Smith & Fowler, 1984; Dougherty et al., 1985) monitors tended to give positive evaluations even when the point earner's behavior did not merit

such evaluations. Partner A was the most extreme in this respect, never giving Karen a negative evaluation for inappropriate behavior.

Inappropriate behavior and the number of academic problems completed were affected more reliably by the intervention than was the accuracy of academic behavior. Three factors may have contributed to this difference. First-contingencies were almost entirely dependent on on-task behavior: 17 points were available for good work behavior, only one point was available for amount of work completed, and no points were awarded for correctness of work completed. Second, the length and difficulty of the assignments varied. The study was conducted over 16 weeks, during which time new math concepts were introduced and practiced during the independent work period. Third, no tutoring was included in the intervention. Thus, Karen's lower math accuracy may have been due, in part, to a skill deficiency, as well as to a lack of contingencies for correct work.

These procedures should be replicated, because the generalizability of these findings is limited by the small number of subjects and somewhat different effects obtained with Robert and Karen. For instance, maintenance effects differed for Robert and Karen. With the exception of one session, Karen maintained the low rate of inappropriate behavior established during intervention when baseline was reinstated for the final nine sessions (3 weeks). In contrast, Robert responded to the withdrawal of treatment by increasing his rate of inappropriate behavior somewhat and by repeatedly asking for a resumption of the peer-monitoring procedure. Because of his requests and the teacher's requests, we reimplemented the intervention after only 3 days of baseline.

The extent to which Karen's behavior was influenced by her partner assignment also merits further research. Karen's rate of inappropriate behavior was less variable with Partner B than with Partner A, perhaps because Partner B was considerably

more accurate in providing negative evaluations when Karen's behavior was inappropriate.

In summary, the procedure appears to be an attractive and cost-efficient solution for reducing inappropriate behavior during independent work times when a teacher is unavailable to supervise. Furthermore, it supports the provision of frequent manager opportunities within a group contingency to children with histories of inappropriate behavior as one method for reducing such inappropriate behavior.

REFERENCES

- Carden-Smith, L. K., & Fowler, S. A. (1984). Positive peer pressure: The effects of peer monitoring on children's disruptive behavior. *Journal of Applied Behavior Analysis* 17, 213-227.
- Dougherty, B. S., Fowler, S. A., & Paine, S. C. (1985). The use of peer monitors to reduce negative interaction during recess. *Journal of Applied Behavior Analysis* 18, 141-153.
- Drabman, R., & Spitznik, R. (1973). Training a retarded child as a behavioral teaching assistant. *Journal of Behavior Therapy and Experimental Psychiatry*, 4, 269-272.
- Fowler, S. A., Dougherty, B. S., Kirby, K. C., & Kohler, F. W. (1986). Role reversals: An analysis of therapeutic effects achieved with disruptive boys during their appointments as peer monitors. *Journal of Applied Behavior Analysis*, 19, 437-444.
- Kalfus, G. R. (1984). Peer mediated intervention: A critical review. *Child & Family Behavior Therapy*, 6, 17-43.
- McGee, C. S., Kauffman, J. M., & Nussen, J. L. (1977). Children as therapeutic change agents: Reinforcement intervention paradigms. *Review of Educational Research*, 47, 451-477.
- Phillips, E. L., Phillips, E. A., Wolf, M. M., & Fixsen, D. L. (1973). Achievement Place: Development of the elected manager system. *Journal of Applied Behavior Analysis*, 6, 541-562.
- Strain, P. S. (1981). Modification of sociometric status and social interaction with mainstreamed mild developmentally disabled children. *Analysis and Intervention in Developmental Disabilities*, 1, 157-169.

Received February 23, 1987

Initial editorial decision May 2, 1987

Revisions received August 13, 1987; October 14, 1987

Final acceptance November 11, 1987

Action Editor, R. Wayne Fuqua